DOCUMENT RESUME

ED 264 224 SP 026 928

AUTHOR Lillard, Diana L.
TITLE A Survey of Warren County Teachers concerning the Instructional Use of Microcomputers.
PUB DATE 21 Jun 85
NOTE 12p.; Paper presented at the Annual Computers in Education in Maryland Conference (4th, Baltimore, MD, June 21, 1985).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Computer Assisted Instruction; Elementary Secondary Education; Instructional Materials; *Teacher Attitudes; Teaching Experience; Teaching Methods
IDENTIFIERS *Pennsylvania (Warren County)

ABSTRACT

The purposes of this study were to determine if relationships existed between teachers' knowledge about, attitude toward, and willingness to use microcomputers for instruction; and to determine if differences existed in teachers' willingness to use microcomputers based on teaching experience and grade level and subjects taught. Results of the study were based on the analysis of microcomputer questionnaires completed by 219 teachers in the Warren County School District, Pennsylvania. The correlations between knowledge, attitude, and willingness were statistically significant, as was the difference in willingness to use microcomputers based upon teaching experience. Differences in willingness based on subject area and grade level were non-significant. The high correlation between attitude toward the instructional use of microcomputers and willingness to use microcomputers emphasizes the importance of attitudes when planning for implementation of computer use in the classroom. Providing workshops or intensive programs to allow teachers the opportunity to learn more about the instructional use of microcomputers was the major recommendation of this study. The questions used in the survey and statistical tables showing responses are appended. (Author/JD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED264224

A SURVEY OF WARREN COUNTY TEACHERS CONCERNING THE INSTRUCTIONAL USE OF MICROCOMPUTERS

by

Diana L. Lillard

Towson State University

SP 026938

BEST COPY AVAILABLE

Presented at the

Fourth Annual Computers in Education in Maryland Conference

Friday, June 21, 1985

University of Maryland Baltimore County

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

D. Lillard

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

✓ This document has been reproduced as received from the person or organization originating it.

[ ] Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

Abstract

The purposes of this study were to determine if relationships existed between teachers' knowledge about, attitude toward, and willingness to use microcomputers for instruction; and to determine if differences existed in teachers' willingness to use microcomputers based on teaching experience, and grade level and subject areas taught. Results of the study were based on the analysis of microcomputer questionnaires completed by 219 of the 460 teachers in the Warren County School District, Pennsylvania. To determine the significance of relationships between the three variables, the Pearson product moment correlation coefficient was used at the .01 level of confidence. To determine the significance of differences in willingness to use microcomputers based on the three variables, an analysis of variance coefficient was used at the .05 level of confidence.

The correlations between knowledge, attitude, and willingness were statistically significant, as was the difference in willingness to use microcomputers based on teaching experience, but differences in willingness based on subject area and grade level were non-significant at the .05 level. The high correlation between attitude toward the instructional use of microcomputers and willingness to use microcomputers emphasizes the importance of attitudes when planning for implementation of computer use in the classroom. Providing workshops or inservice programs to allow teachers the opportunity to learn more about the instructional use of microcomputers was the major recommendation of this study.

Background

The information industry is now becoming a major component of the United States economy. This change will bring a change in the jobs and roles of the workers. The information revolution will place new demands on individuals, changing what they must know and what skills they must have to participate fully in society. In a Congressional report, the Office of Technology Assessment made the claim that people who cannot make effectual use of information technology may find themselves unable to deal effectively with their government and to obtain and hold a job.(1)

The key to successfully meeting the challenges presented by this technological transformation is to adopt new educational methods which make the computer an integral part of every learner's day-to-day experience. Dave Moursund, president of the International Council for Computers in Education, writes that students who receive an education fully integrating computers as a topic of instruction, an aid to problem solving, and as an aid to learning, will have tremendous advantage over those who do not. Educational leaders and the general public will come to expect that schools will provide this education.(2)

Arthur Leuhrmann writes that computing plays such a critical role in everyday life and in the technological future of the nation that "the general public's ignorance constitutes a national crisis."(3) To prevent what many have referred to as the next national crisis in education, teachers and administrators must prepare for the successful integration of computer technology into school programs.

Research studies have pointed out that two major reasons instructional technology is not successfully implemented into public schools is lack of knowledge about the innovation on the part of the teachers and a negative view held by teachers about the instructional value of the technology.

BEST COPY AVAILABLE

Thus, before any educational change can be implemented efficiently and effectively, the levels of expertise and attitudes of educators involved must be determined.

This study was conducted to provide the Warren County School District in Warren, Pennsylvania with information regarding the attitudes of the teachers they employ toward the instructional use of microcomputers, their level of knowledge about the instructional value of microcomputers, and their willingness to use this instructional innovation in their classes. In addition, this study was used to determine if relationships existed between teachers' knowledge about the instructional use of microcomputers, their attitude toward the microcomputer as an instructional tool, and their willingness to use microcomputers in the classroom; and to determine if differences existed in teachers' willingness to use microcomputers based on years of teaching experience, secondary subject areas taught, and grade level taught.

This study was based on survey research. Questionnaires concerning the instructional use of microcomputers were sent to the 460 teachers in the Warren County School District. Results are based on the statistical analysis of 219 completed questionnaires in which teachers responded to items concerning knowledge about microcomputers, attitude toward microcomputers, and willingness to use microcomputers. Relationships were tested using the Pearson product moment correlation and differences in willingness, were tested using an analysis of variance.

Results of the Survey

Results of the statistical analysis of the survey are presented in the tables found in the appendix. Analysis of the data collected in this study indicated that positive, significant correlations existed between (1) teachers' knowledge about and attitude toward the instructional use of microcomputers, (2) teachers' attitude toward and willingness to use microcomputers, and (3) teachers' knowledge about and willingness to use microcomputers. The strong relationship exhibited between the attitude teachers have toward microcomputers and their willingness to use them confirms previous findings, indicating the importance of teachers' attitudes in the successful implementation of an instructional innovation.

The analysis of the data indicated a significant difference existed between the teaching experience groups, not only at the 0.05 level of significance, but also at the 0.01 level. This finding was unexpected since it is not supported by the results from similar studies that have been conducted. Results of this study indicate teachers having more than 10 years of teaching experience are less willing to use microcomputers in their classroom than the more inexperienced teachers.

The willingness to use microcomputers for instruction appeared to be unaffected by subject area or grade level. Testing for significance at the 0.1 level of significance had no affect on the outcome for differences between secondary technical and non-technical subject areas. These results do not agree with the findings of previous studies. It is possible that the low rate of response from the secondary teachers may have prevented establishing significance for this hypothesis.

The differences between elementary and secondary teachers were much closer. At the 0.05 level of significance the calculated F value of 3.202 was not far from the critical F value of 3.84. If a larger percentage of the secondary teachers had responded to the survey, results may have

BEST COPY AVAILABLE

concurred with the findings of similar studies, that there is a significant difference between elementary and secondary teachers and their willingness to use microcomputers for instruction. The results of this study indicate a significant difference does exist at the 0.1 level of significance.

The teachers surveyed indicated a high level of willingness to use microcomputers in their classrooms. Most teachers did not feel it would be too much trouble to use microcomputers for instruction and, in fact, would like to learn more about the instructional uses of microcomputers. Nearly 77 percent of the sample indicated they would participate in a computer literacy workshop. These results indicate that efforts made by the school district to provide programs would be well received.

Based on the findings of this study, teachers exhibited a positive attitude toward the use of microcomputers in schools. They were not supportive of the claim that the instructional use of microcomputers would dehumanize schools. Teachers also did not believe microcomputers in schools would reduce personal interaction between students and teachers or that using microcomputers in schools would isolate students from other students. Teachers felt strongly that students should have access to microcomputers in schools and be computer literate when they graduate from high school. In conjunction with this, most teachers felt that teachers should also be computer literate.

Teachers have indicated that because of the widespread and expanding role of computer technology in our society, schools should use microcomputers in their instructional programs. Most teachers agree that microcomputers are not worthless as instructional tools, but useful. They feel schools should purchase and encourage the use of microcomputers for instruction. Fifty-nine percent of the teachers even claimed that the use of microcomputers could improve the quality of education in their school district.

Along with the strong support for microcomputers in the schools, a considerable number of teachers, ranging from 20 to 40 percent in most cases, were undecided about microcomputers and their instructional use. Since a relationship exists between knowledge and attitude, it appears that by providing programs to increase the knowledge of these teachers about microcomputers, these teachers' attitudes toward the instructional use of microcomputers would become increasingly positive. This would leave, in most cases, less than 10 percent of the teachers harboring negative feelings about microcomputers and only five percent with strongly negative attitudes.

Recommendations

Teachers play an important role in the implementation of an instructional innovation such as microcomputers. They must have a knowledge of how microcomputers can be used in the classroom, maintain a positive attitude toward the instructional use of microcomputers, and be willing to use them in their classes if microcomputer use is to be successfully implemented.

Most teachers are aware of the role computers play in society and the need for students to be computer literate when they graduate from high school. Though some have completed courses or workshops on computer literacy, most teachers are not computer literate and not aware of the instructional uses that can be made of microcomputers. However, there is a strong willingness to learn. Therefore, to help teachers obtain the

BEST COPY AVAILABLE

knowledge needed, school districts should offer workshops or courses on computer literacy and the instructional use of microcomputers. Various workshops should be available throughout the school year and summer to provide educators with the opportunity: (1) to investigate methods of implementing microcomputers in their classes, (2) to learn what to look for when selecting software and provide time for evaluation of available software, and (3) to acquire skills in using commercial packages or developing computer programs. In-service days should be provided to allow teachers throughout the area to share ideas on how microcomputers can effectively be used in the classroom.

Schools should have at least one staff member aware of the problems as well as the potential of computer related instruction to provide support for other teachers in the school.

Efforts should be made by schools to establish a software evaluation committee to provide teachers with information on software that is being used throughout the area, as well as software reviews. A software library should be maintained within a school district to provide teachers with the opportunity to review available software.

Teachers feel the implementation of microcomputers for instruction is important. School districts must realize this importance and place a high priority on the successful implementation of microcomputers in the curriculum. In most districts this will mean that additional funds must be allocated for the educational use of microcomputers. Schools must realize that having one microcomputer per school cannot meet the needs of all teachers and students. They should strive to provide all teachers with microcomputers or ample access to large microcomputer labs. The number of microcomputers available in a school should correspond to the number of students in the school so there is at least one microcomputer for every 20 students.

This researcher recommends that further studies be conducted in suburban as well as urban areas. Replication in all states would provide a comprehensive view of teachers' ideas about the instructional use of microcomputers. A follow-up study would be valuable in order to obtain information about how teachers' attitudes change over a period of time, or after provision of programs on the educational use of microcomputers.

This study attempted to provide information regarding teachers' knowledge about the instructional use of microcomputers, attitude toward microcomputers as instructional tools, and willingness to use microcomputers in the classroom. With this information, programs regarding the instructional uses of microcomputers can be developed that will be beneficial to all teachers and their pupils.

References

1. "Informational Technology and Its Impact on American Education," The Computing Teacher, Jan. 1983, pp. 18-29.

2. Dave Moursund, Introduction to Computers in Education for Elementary and Middle School Teachers (Eugene: International Council for Computers in Education, 1982), p. 77.

3. Arthur Leuhrmann, "Computer Illiteracy: A National Crisis and a Solution For It," Byte, July 1980, pp. 101-02.

BEST COPY AVAILABLE

Appendix

Table 1

Responses to Questions on Knowledge of Microcomputers
(N = 219)

QUESTIONS	No. of Teachers			Percent of Teachers		
	YES	NO	NR	YES	NO	NR
1. Do you own a microcomputer?	42	177	0	19.2	80.8	0.0
2. Do you have access to a microcomputer?	150	68	1	68.5	31.0	0.5
3. Have you had any experience with a microcomputer?	152	67	0	69.4	30.6	0.0
4. Have you attended a microcomputer demonstration?	155	64	0	70.8	29.2	0.0
5. Have you attended a microcomputer seminar or workshop?	140	79	0	63.9	36.1	0.0
6. Have you completed a course or workshop in computer literacy?	85	133	1	38.8	60.7	0.5
7. Do you read about microcomputers?	107	112	0	48.9	51.1	0.0
8. Do you consider yourself informed about the use of microcomputers in instruction?	54	165	0	24.7	75.3	0.0
9. Do you consider yourself to be "computer literate"?	48	168	3	21.9	76.7	1.4
10. Can you operate a microcomputer well enough to use a commercially produced computer program?	126	92	1	57.5	42.0	0.5
11. Have you written a computer program?	50	169	0	22.8	77.2	0.0

(NR = No Response)

Table 2

Frequency Distribution of Knowledge of Microcomputer Scores of Respondents
(N = 219)

Knowledge Score	Frequency
11	11
10	11
9	15
8	18
7	23
6	17
5	26
4	23
3	21
2	16
1	18
0	20

BEST COPY AVAILABLE

COPY AVAILABLE

Table 3

Responses to Questions on
Willingness to Use Microcomputers
(N = 219)

QUESTIONS	No. of Teachers			Percent of Teachers		
	YES	NO	NR	YES	NO	NR
12. Would you use a microcomputer for record-keeping in your classroom?	101	106	12	46.1	48.4	5.5
13. Are you too busy to use microcomputers in your classroom?	63	138	18	28.8	63.0	8.2
14. Would you like to learn more about the instructional uses of microcomputers?	181	34	4	82.7	15.5	1.8
15. Would it be too much trouble for you to learn to use microcomputers for instruction in your classes?	22	189	8	10.0	86.3	3.7
16. Would you use a microcomputer to provide instruction in your classroom?	173	31	15	79.0	14.2	6.8
17. Would you participate in a computer literacy workshop?	168	41	10	76.7	18.7	4.6
18. Would you use a microcomputer for student testing in your classroom?	127	75	17	58.0	34.2	7.8
19. Are you interested in using a microcomputer in your classroom?	163	42	14	74.4	19.2	6.4

(NR = No Response)

Table 4

Frequency Distribution of Respondents
on Willingness to Use Microcomputers
(N = 219)

Willingness Score	Frequency
8	58
7	52
6	29
5	24
4	14
3	9
2	11
1	13
0	9

BEST COPY AVAILABLE

Table 5

Responses to Statements Reflecting
Attitude Toward Microcomputers
(N = 219)

QUESTIONS	Number of Teachers						Percent of Teachers					
	SA	A	U	D	SD	NR	SA	A	U	D	SD	NR
1. Microcomputers are too expensive to use as instructional tools.	5	19	77	69	48	1	2.3	8.7	35.1	31.5	21.9	0.5
2. Using microcomputers in schools reduces personal interaction between teachers and students.	17	38	61	73	30	0	7.8	17.3	27.9	33.3	13.7	0.0
3. Because of the widespread and expanding role of computer technology in our society, schools should use microcomputers in their instructional programs.	62	102	43	8	4	0	28.3	46.6	19.6	3.7	1.8	0.0
4. Students should be computer literate when they graduate from high school.	92	89	30	8	0	0	42.0	40.6	13.7	3.7	0.0	0.0
5. The use of microcomputers can improve the quality of education in our school district.	43	86	77	11	2	0	19.6	39.3	35.2	5.0	0.9	0.0
6. Microcomputers are worthless as instructional tools.	4	4	24	75	111	1	1.8	1.8	11.0	34.2	50.7	0.5
7. I do not enjoy using a microcomputer.	13	14	62	60	59	11	5.9	6.4	28.3	27.4	26.9	5.0
8. The role of the teacher will be changed if microcomputers are used in the classroom.	13	52	81	49	24	0	5.9	23.7	37.0	22.4	11.0	0.0
9. Students should have access to microcomputers in schools.	72	114	26	3	3	1	32.8	52.0	11.9	1.4	1.4	0.5
10. Using microcomputers in schools will isolate students from other students.	3	16	51	98	50	1	1.4	7.3	23.3	44.7	22.8	0.5
11. Schools should purchase microcomputers for instructional use.	64	99	41	11	2	2	29.2	45.3	18.7	5.0	0.9	0.9
12. A microcomputer will help students learn.	53	88	65	8	4	1	24.2	40.2	29.6	3.7	1.8	0.5
13. The instructional use of microcomputers will dehumanize schools.	5	10	55	89	59	1	2.3	4.6	25.1	40.6	26.9	0.5
14. Teachers should be computer literate.	66	117	23	6	5	2	30.2	53.4	10.5	2.7	2.3	0.9
15. I enjoy using innovative techniques in my classroom.	77	109	26	2	1	4	35.1	49.8	11.9	0.9	0.5	1.8
16. Implementation of microcomputers for instruction should be encouraged.	53	106	44	13	1	2	24.2	48.4	20.1	5.9	0.5	0.9
17. Microcomputers are no better than the techniques currently available.	20	32	88	58	19	2	9.1	14.6	40.2	26.5	8.7	0.9
18. Microcomputers will enable teachers to do a better job.	30	60	102	19	7	1	13.7	27.4	46.5	8.7	3.2	0.5
19. Microcomputers used for instruction will cause more problems than they will solve.	8	8	92	77	34	0	3.7	3.7	42.0	35.1	15.5	0.0
20. The microcomputer is a useful instructional tool.	58	106	45	6	3	1	26.5	48.4	20.5	2.7	1.4	0.5
21. Microcomputers are more effective than books as teaching tools.	11	8	78	87	35	0	5.0	3.7	35.6	39.7	16.0	0.0
22. Microcomputers are too complicated for me to use in my classroom.	4	14	56	94	49	2	1.8	6.4	25.6	42.9	22.4	0.9
23. I feel apprehensive about learning to use a microcomputer.	10	38	41	80	48	2	4.6	17.4	18.7	36.5	21.9	0.9
24. The use of microcomputers requires a strong background in mathematics.	7	12	67	82	48	3	3.2	5.5	30.6	37.4	21.9	1.4

(SA = Strongly Agree, A = Agree, U = Undecided, D = Disagree, SD = Strongly Disagree, NR = No Response)

BEST COPY AVAILABLE

Table 6

Frequency Distribution of Respondent's Scores
on Attitude Toward Microcomputers
(N = 219)

Range of Attitude Scores	Frequency
114 - 120	5
106 - 113	22
98 - 105	27
90 - 97	57
82 - 89	43
74 - 81	37
66 - 73	17
58 - 65	5
50 - 57	5
42 - 49	1

Table 7

Pearson Product Moment Correlation Between
Attitude Toward Microcomputers and
Knowledge of Microcomputers
(N = 219)

Attitude	Mean = 88.40	S.D. = 13.81
Knowledge	Mean = 5.06	S.D. = 3.19
r = 0.466 **	Significant at P<.01	

Table 8

Pearson Product Moment Correlation Between
Knowledge of Microcomputers and
Willingness to Use Microcomputers
(N = 219)

Knowledge	Mean = 5.06	S.D. = 3.19
Willingness	Mean = 5.66	S.D. = 2.39
r = 0.376	Significant at P<.01	

Table 9

Mean and Standard Deviation for Respondents'
Willingness to Use Microcomputer Scores
Based on Years of Teaching Experience
(N = 219)

Years of Experience	Mean	S.D.	N
1 - 5	6.00	1.75	18
6 - 10	6.40	1.83	32
11 - 20	5.93	2.35	116
21+	4.51	2.61	53

BEST COPY AVAILABLE

Table 10

Analysis of Variance for Respondents' Willingness to Use Microcomputer Scores Based on Years of Teaching Experience (N = 219)

	DF	Mean Square	Critical F Values	
Between	3	32.86	P = .05 2.65	F = 6.162 **
Within	215	5.33	P = .01 3.88	
** Significant at P<.01				

Table 11

Mean and Standard Deviation for Respondents' Willingness to Use Microcomputer Scores Based on Secondary Subject Area (N = 89)

Subject Area	Mean	S.D.	N
Technical	5.24	2.71	25
Non-Technical	5.34	2.76	64

Table 12

Analysis of Variance for Respondents' Willingness to Use Microcomputer Scores Based on Secondary Subject Area (N = 89)

	DF	Mean Square	Critical F Values	
Between	1	0.19	P = .05 3.89	F = 0.026
Within	87	7.53	P = .01 6.76	

Table 13

Mean and Standard Deviation for Willingness to Use Microcomputer Scores Based on Grade Level (N = 219)

Grade Level	Mean	S.D.	N
Elementary	5.90	2.11	130
Secondary	5.31	2.73	89

BEST COPY AVAILABLE

Table 14

Analysis of Variance for
Willingness to Use Microcomputer Scores
Based on Grade Level
(N = 219)

	DF	Mean Square	Critical F Values		
Between	1	18.10	P = .05	3.89	F = 3.202
Within	217	5.65	P = .01	6.76	

BEST COPY AVAILABLE